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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BUTTE DIVISION

CENTER FOR BIOLOGICAL DIVERSITY, *et al.*,

Plaintiffs,

v.

DEBRA A. HAALAND, *et al.*,

Defendants,

STATE OF MONTANA, *et al.*,

Defendant-Intervenors.

Case No. 2:23-cv-00002-BMM

BRIEF IN SUPPORT OF PLAINTIFFS' MOTION FOR SUMMARY JUDGMENT

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INTRODUCTION

This case challenges the U.S. Fish and Wildlife Service's arbitrary and unlawful decision to again deny a struggling population of cold-water fish—the Arctic grayling in the Upper Missouri River Basin—the protections of the Endangered Species Act. *See* Notice, 85 Fed. Reg. 44,478 (July 23, 2020) (AR:1646). While grayling once flourished in more than 1,200 miles of streams across southern Montana and northern Wyoming, the species is now "considered extirpated" from a majority of this habitat—and further losses are threatened by climate change. *See* Revised 12-Month Finding (June 29, 2020) (AR:10955) ("2020 Finding"), at 11–12, 170. Rather than acknowledging the mounting threats faced by grayling, however, the Service has arbitrarily declared that portions of the population have now achieved "relative stability" and will be sufficiently protected by the inadequate standards of a voluntary and time-limited conservation agreement. *Id.* at 55–74, 179–87. To ensure the population's survival, this Court should reject the agency's flawed decision.

BACKGROUND

The Arctic grayling's name is only half right. As its adjective implies, the grayling was built for cold rivers, pools, and lakes—like those found in the Arctic Ocean drainages where the species has long thrived. 2020 Finding 10, 41–42, 91–92. But the fish isn't the dull thing that "grayling" might suggest. In the words of the U.S. Fish and Wildlife Service, the grayling's "[c]oloration can be striking, … var[ying] from silvery or iridescent blue and lavender, to dark blue[.]" *Id.* at 9. And this brilliance is most pronounced on the fish's "sail-like dorsal fin, which is large and vividly colored with rows of orange to bright green spots":

Id. at 9–10; AR:2601. Even among its relatives in the salmon family, in other words, the Arctic grayling is a remarkably "beautiful fish[.]"

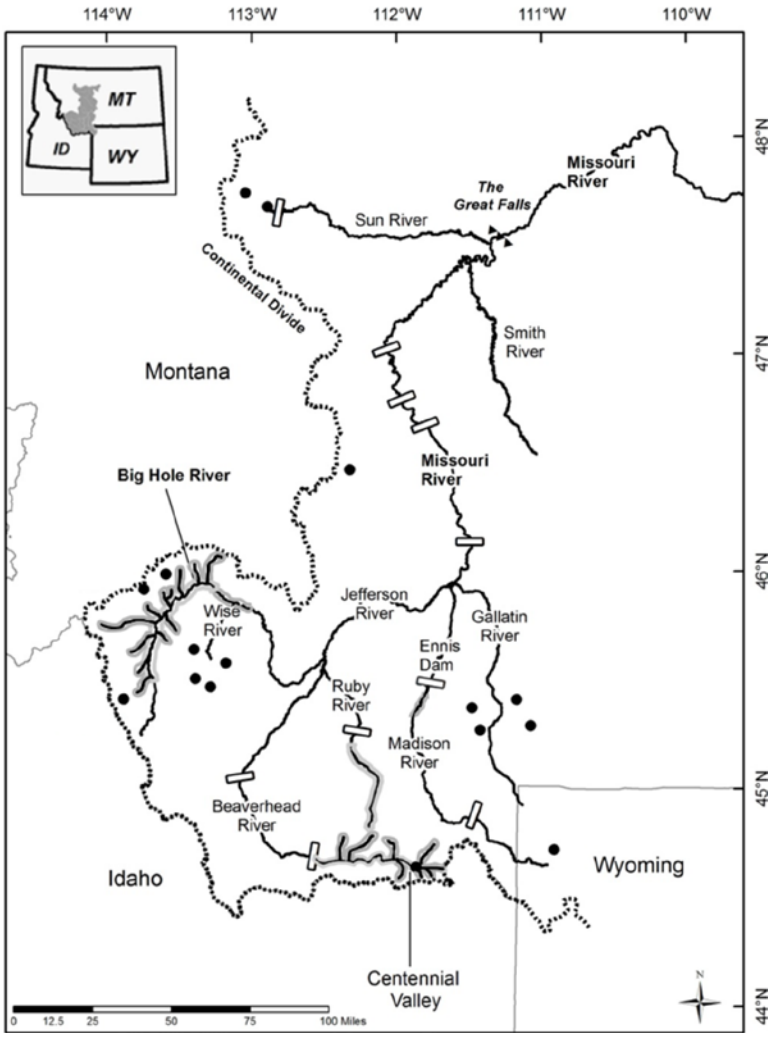
AR:5347 (Hubbs (1949)).[1]

I. The decline and disappearance of the Arctic grayling in the contiguous United States.

Outside its habitat in Alaska and northwestern Canada, the Arctic grayling was once native to two regions in the lower-48: Michigan, where the fish was known to be "very abundant[,]" and the Upper Missouri River Basin, where grayling habitat stretched from southwestern Montana into northeastern Wyoming. 2020 Finding 10–12; AR:5347 (Hubbs (1949)). The Michigan population "became extinct … in the late 1930's"—a result of habitat degradation, invasive trout, and other factors. AR:5347 (Hubbs (1949)). While grayling can still be found in the Upper Missouri basin, both their reach and their numbers have contracted dramatically in the past century as waters have warmed and stream flows have weakened. 2020 Finding 11–12. At present, grayling are thought to occupy only "314 miles … of rivers and streams[,] and 6,045 hectares … of lakes and reservoirs"—roughly a quarter of their historic habitat in the region. *Id.* at 11, 55. "The

[1] "AR" citations refer to the administrative record, as Bates stamped by the Service. Citations to the "2020 Finding" use its internal pagination.

populations that formerly resided in the Smith, Sun, Jefferson, Beaverhead, Gallatin, and mainstem Missouri Rivers are considered extirpated[.]" *Id.* at 12, 55–56. And the grayling's remaining river-dwelling, or "fluvial," populations in Montana's Big Hole, Madison, Red Rock, and Ruby drainages are small and unstable:



Id. at 14 ("Figure 1. Approximate current distribution [gray outlines (rivers/streams) and black circles (lakes)] of … grayling in the upper

Missouri … basin.") (alterations in original); *see also, e.g.*, *id.* at 55–73.

II. The efforts to protect Montana's grayling under the Endangered Species Act—and the Service's failure to do so.

For more than thirty years, conservationists have sought to secure the protections of the Endangered Species Act, or "ESA," for the grayling in Montana's Upper Missouri River Basin. 2020 Finding 2–8. And for more than thirty years, the U.S. Fish and Wildlife Service has arbitrarily failed to list the fish under the statute. *Id.*

As the Supreme Court has long recognized, "the Endangered Species Act of 1973 represented the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978). With the statute, Congress established both a "program for the conservation of … endangered species and threatened species," and a "means … [for conserving] the ecosystems upon which … [they] depend[.]" 16 U.S.C. § 1531(b). In order for an imperiled species or population to be protected under the statute, however, it must first be listed as either "endangered" or "threatened"—that is, "in danger of extinction throughout all or a significant portion of its range[,]" or "likely to

become an endangered species within the foreseeable future throughout all or a significant portion of its range." *Id.* §§ 1532(6), (20).

In 1991, conservationists first petitioned the Service to list the lower-48's Arctic grayling as endangered. *See* 12-Month Finding, 59 Fed. Reg. 37,738, 37,739 (July 25, 1994). After the agency concluded that the listing of the Upper Missouri's fluvial population was "warranted but precluded by other higher priority listing actions[,]" *id.*, conservationists filed suit. 2020 Finding 3. Rather than defending its decision, the Service ultimately agreed to issue a revised finding in 2007. *Id.* at 3–4.

With its 2007 decision, the Service offered a new theory in support of its refusal to list Arctic grayling. While the ESA authorizes the agency to list and protect "species," "subspecies," and "distinct population segments," the Service's revised finding declared that the Upper Missouri's fluvial population wasn't any of these things. Revised 12-Month Finding, 72 Fed. Reg. 20,305 (Apr. 24, 2007); 16 U.S.C. § 1532(16) ("species" includes "any subspecies" or "distinct population segment" of fish). When conservationists challenged this determination,

however, the agency again relented—agreeing to issue another revised finding on the grayling's status. 2020 Finding 4.

In 2010, the Service published a new decision recognizing that all of the Upper Missouri's grayling—including both the fluvial river-dwellers and "adfluvial" lake-dwellers—constitute a "distinct population segment," or "DPS," that qualifies for listing under the ESA. Revised 12-Month Finding, 75 Fed. Reg. 54,708, 54,722 (Sept. 8, 2010) (AR:9163). The agency further acknowledged that the population's listing as endangered or threatened was "warranted" due to a host of threats that promise to be exacerbated by climate change: the "alteration of [the grayling's] habitats" as a result of "habitat fragmentation from large dams or smaller irrigation diversion structures, stream dewatering, high summer water temperatures, loss of riparian habitats, and entrainment in irrigation ditches[;]" "[s]evere drought" that "likely affects all populations by reducing water availability and reducing the extent of thermally suitable habitat[;]" the fish's "competition with and predation by nonnative trout[;]" and the apparent inadequacy of existing state and federal regulatory mechanisms to protect grayling from these problems. *Id.* at 54,708,

54,742. Once again, however, the Service refused to move forward with a listing rule, declaring instead that the "listing [of] the upper Missouri River DPS … [wa]s currently precluded by higher priority [listing] actions[.]" *Id.*

In response to another round of litigation, the Service revisited the status of Montana's grayling population in 2014. Revised 12-Month Finding, 79 Fed. Reg. 49,384, 49,385 (Aug. 20, 2014). According to the agency's revised finding, "[t]he best available scientific and commercial information indicate[d] that [the] habitat-related threats … identified" by the Service only four years before had been "sufficiently ameliorated[.]" *Id.* at 49,384. The agency accordingly declared that "listing the … DPS … [wa]s not warranted[.]" *Id.*

The Center for Biological Diversity, Western Watersheds Project, and Pat Munday—the plaintiffs in this case—challenged the Service's not-warranted finding in 2015. *See Ctr. for Biological Diversity v. Zinke ("CBD")*, 900 F.3d 1053, 1062 (9th Cir. 2018). In its 2018 opinion, the Ninth Circuit agreed that the Service had acted arbitrarily in "ignoring available biological data showing that the arctic grayling population in the Big Hole River was declining[,]" *id.* at 1068–69; in "dismiss[ing]

threats of low stream flows and high stream temperatures" to the Big Hole's grayling based on the supposed availability and use of "thermal refugia[,]" *id.* at 1069–71; in "failing to explain why … the warming of water temperatures and decreasing water flow because of global warming" did not pose a significant threat to the fish, *id.* at 1072–73; and in "rely[ing] on the Ruby River population to provide redundancy of fluvial arctic grayling beyond the Big Hole River[,]" despite the lack of sufficient data to demonstrate the population's viability, *id.* at 1074. The Service's not-warranted finding was accordingly remanded to the agency for reconsideration. *Id.* at 1075.

III. The Service's latest determination that Arctic grayling have no need for the Endangered Species Act's protections.

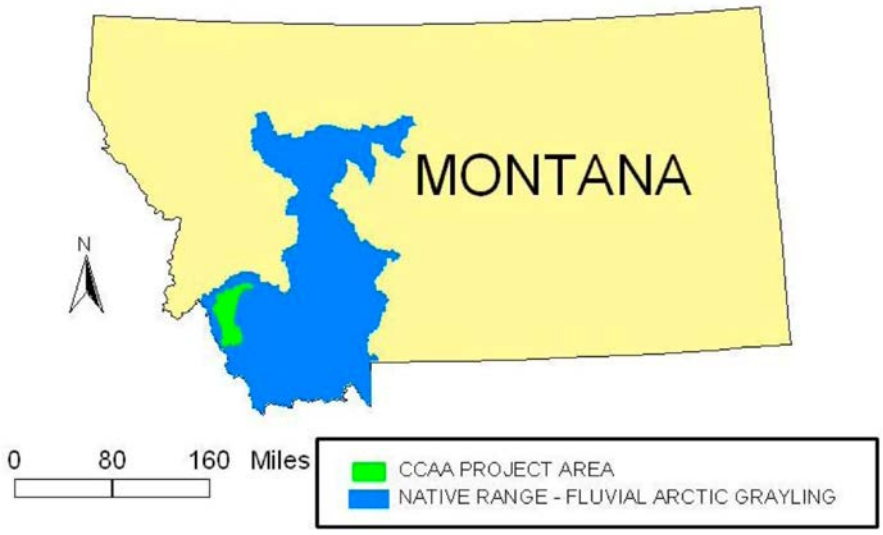
On June 29, 2020, the Service responded to the Ninth Circuit's decision by issuing its fourth revised finding on the Upper Missouri grayling—one that again refused to grant the population the ESA's protections. 2020 Finding 1–7. In its decision, the agency acknowledged that the region's grayling—fluvial and adfluvial—are vital to the well-being of the species as a whole, given that they "have evolved in isolation for millennia in a generally warmer climate than other populations" and accordingly carry "[t]he potential for thermal

adaptations" in response to "expected climate change scenarios." *Id.* at 41–42. And it further admitted that three of the region's four populations with a "fluvial component"—in the Ruby River, Centennial Valley, and Madison River drainage—are both precariously small and declining. *Id.* at 66–74, 180. Ultimately, though, the Service insisted that there was no reason to worry about the grayling's viability due to their supposed stability in the Big Hole River, their ability to find and use thermal "refugia," and the conservation measures provided for under a Candidate Conservation Agreement with Assurances, or "CCAA," in the Big Hole drainage. *See, e.g.*, *id.* at 55–66, 122–23.

The Big Hole CCAA is aimed at encouraging private landowners in the region to assist in conserving grayling habitat. *Id.* at 122–23. Around 90 percent of the Big Hole's grayling population is found in streams on private land. *Id.* As a result, "any conservation efforts … need support from … private landowners." *Id.* at 82. Under the CCAA—which the Service and Montana's Department of Fish, Wildlife and Parks executed in July 2006—the state issues certificates of inclusion to private landowners who agree to comply with the CCAA and develop approved site-specific plans. *Id.* at 1165, 1167, 1254. In exchange,

landowners receive assurances against additional regulatory requirements should the species later be listed. *Id.* at 1167.

While the CCAA includes measures aimed at improving streamflows and riparian habitats, removing barriers to grayling migration, and reducing entrainment threats, they fall well short of what the species requires. *Id.* at 1167; Section III–V, *infra*. The CCAA is limited, first, to the Big Hole, which constitutes a fraction of the grayling's current and native range in Montana:



AR:1168 (CCAA) (Fig. 1). As of July 2020, moreover, only about half of the qualifying land in the CCAA's project area had been enrolled. 2020 Finding 122; AR:1239 (CCAA). And the agreement, finally, is set to expire soon—in 2026. *See* AR:1239 (CCAA).

Despite its limitations, the CCAA was critical to the Service's not-warranted finding. The agency found that threats to grayling "are being effectively mitigated"—within the Big Hole, at least—"by conservation actions" under the agreement, and that the mounting effects of climate change won't change this. 2020 Finding 177. Given the plan's limited reach and inadequate requirements, however, this conclusion was arbitrary. The plaintiffs accordingly filed the present challenge in another effort to provide the Upper Missouri grayling with the statutory protections they have long been owed.[2]

ARGUMENT

The Service's challenged decision was at odds with both the best-available science and the requirements of the Endangered Species Act. It should be vacated and remanded by this Court.

I. The standard of review and the Endangered Species Act.

The Administrative Procedure Act directs federal courts to set aside agency actions that are "'arbitrary, capricious, an abuse of

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[2] The plaintiffs' standing to bring this case is demonstrated by the accompanying declarations of Noah Greenwald, Pat Munday, and Patrick Kelly, which demonstrate interests in Upper Missouri grayling that will be harmed if the challenged decision is allowed to stand.

discretion, or otherwise not in accordance with law.'" *Japanese Vill., LLC v. Fed. Transit Admin.*, 843 F.3d 445, 453 (9th Cir. 2016) (quoting 5 U.S.C. § 706(2)(A)). This requires a reviewing court to undertake a "searching and careful" review, *id.* at 453–54, "'ensur[ing] that the agency considered the relevant factors and articulated a rational connection between the facts found and the choices made.'" *Greater Yellowstone Coal. v. Servheen*, 665 F.3d 1015, 1023 (9th Cir. 2011) (quoting *Nw. Ecosystem All. v. U.S. Fish and Wildlife Serv.*, 475 F.3d 1136, 1140 (9th Cir. 2007)). Here, the "relevant factors" are set forth in the Endangered Species Act, which required the Service to determine—based on "the best scientific and commercial data available"—whether Montana's grayling population is threatened or endangered as a result of "(a) the present or threatened destruction, modification, or curtailment of its habitat or range; (b) overutilization for commercial, recreational, scientific, or educational purposes; (c) disease or predation; (d) the inadequacy of existing regulatory mechanisms; or (e) other natural or manmade factors affecting its continued existence." 16 U.S.C. §§ 1533(b)(1)(A), (a)(1).

While the Service's listing determination should have involved the application of "technical expertise[,]" the Court "need not defer to the agency when the agency's decision is without substantial basis in fact[.]" *Ariz. Cattle Growers' Ass'n v. Salazar*, 606 F.3d 1160, 1163 (9th Cir. 2010). And the Service, moreover, could not reverse the findings it had previously made without first providing a "reasoned explanation" for doing so. *FCC v. Fox Television Stations*, 556 U.S. 502, 515 (2009).

II. The Service acted arbitrarily in dismissing the threats posed to the Upper Missouri's grayling as a result of their small and unstable population numbers.

In its 2010 warranted-but-precluded finding, the Service acknowledged that "[t]he distribution of native Arctic grayling in the upper Missouri River … [had gone] through a dramatic reduction in the first 50 years of the 20th century, especially in riverine habitats[,]" where "the only remaining indigenous fluvial population … in the Big Hole River and some if its tributaries … occupie[d] only 4 to 5 percent of its historic range[.]" 75 Fed. Reg. at 54,713. And it further recognized that all but one of the region's native subpopulations of grayling—including that in the Big Hole—were at risk of extinction "because of low population abundance[,]" which threatened the population as a

whole. *Id.* at 54,724–25. With its challenged finding, however, the Service largely disregarded its prior analysis and conclusions, declaring that some of the region's grayling, at least, had reached "relative stability" and were no longer imperiled as a result of their limited numbers. *See, e.g.*, 2020 Finding 59–73. This was arbitrary.

A. The Service's repeated assertion that the population of grayling in the Big Hole River has achieved "relative stability" was unfounded and arbitrary.

As in 2010, much of the analysis in the Service's challenged finding focused on the status of grayling within the Big Hole. *See, e.g.*, 2020 Finding 55–66. There was good reason for this. The Big Hole has long served as the last hope for river-dwelling, or fluvial, grayling within the Upper Missouri basin. *See* 2010 Finding, 75 Fed. Reg. at 54,713. As the Service has long recognized the importance of conserving both fluvial and adfluvial grayling to increase the species' resilience in the face of "anticipated environmental challenges … [like] climate change[,]" the viability of the Big Hole population has been key to the viability of the Upper Missouri population as a whole. *See, e.g.*, 2020

Finding 55–74, 184; 2010 Finding, 75 Fed. Reg. at 54,741, 54,743.[3] This remains true, unfortunately, given the precarious status of the fluvial grayling in the Ruby River, where the fish are in decline from a population size of only seven effective breeders, AR:10272 (Gander (2019)); the Centennial Valley, where grayling are declining due to habitat conditions the Service has no plans to remedy, 2020 Finding 66–69; and the Madison River, where the Service admits grayling "may potentially be considered in danger of extinction[,]" *id.* at 186.

While it appears grayling were historically "distributed throughout much of the Big Hole[,]" the population's "overall range … contracted" significantly in recent decades. 2010 Finding, 75 Fed. Reg.

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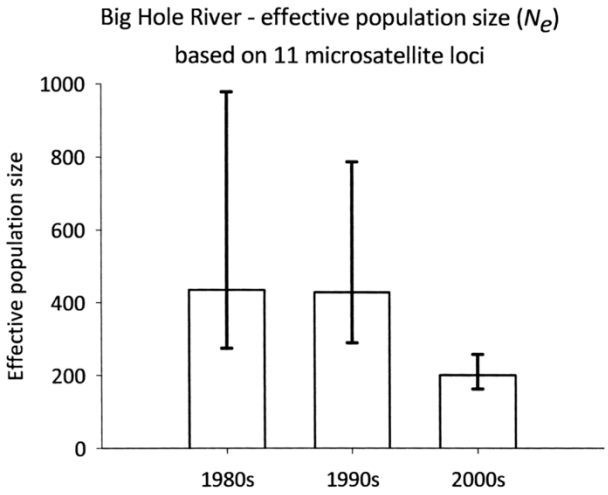
[3] The Service's 2020 finding at times suggests that the distinction between the grayling's river- and lake-dwelling "life histories" (or "forms") is not as significant as previously thought, given "that there appears to be a spectrum of behaviors that Arctic grayling are using, rather than the two distinct strategies that were formerly classified as fluvial and adfluvial[.]" 2020 Finding 32. Ultimately, though, the Service reaffirmed that "[t]here are differences in genetic characteristics among the different forms of Arctic grayling[;]" that "[t]he ability of different life forms of Arctic grayling to give rise to other populations is unclear[;]" and that "preservation of the breadth of the known Arctic grayling life history spectrum" accordingly remains "warranted." *Id.* at 34–36. The agency's failure to ensure the preservation of fluvial grayling was accordingly arbitrary.

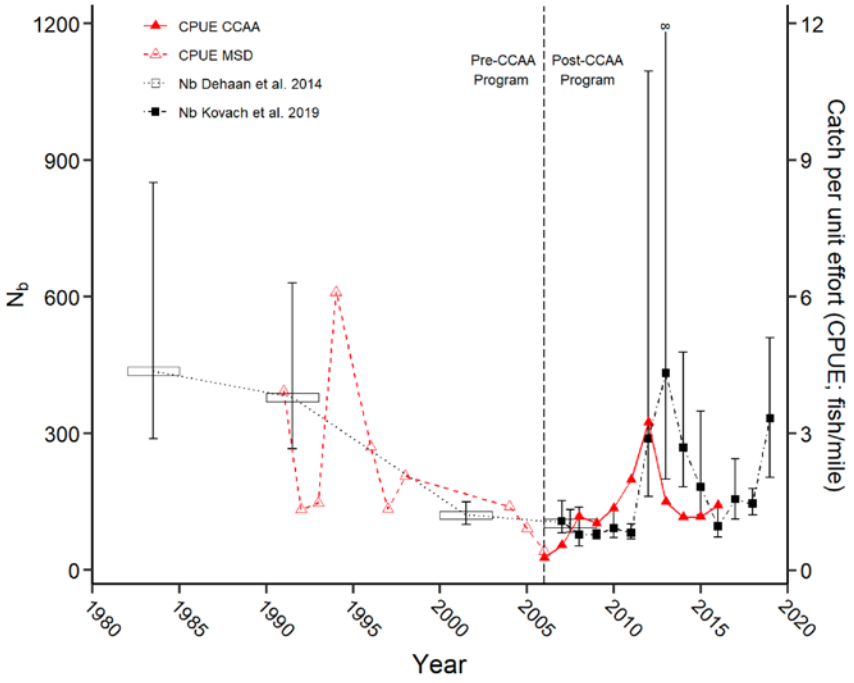
at 54,722; 2020 Finding 56. This contraction came with a significant reduction in grayling numbers. In the words of the Service's 2010 warranted-but-precluded finding, the "adult population [in the Big Hole River] declined by one half between the early 1990s and the early 2000s … , which [wa]s equivalent to a decline of 7 percent per year, on average":



2010 Finding, 75 Fed. Reg. at 54,723.

The past twenty years have been little better for the Big Hole's grayling. As the Service noted in its challenged finding, the population "decreased to historical lows … [in] 2006[,]" rose back to 1990s levels around 2012, and then fell again, dropping to numbers seen in the early

2000s by 2015. 2020 Finding 59, 61. The resulting trendline is a picture of volatility:



Id. at 61 (Fig. 2: "Trends in abundance (indexed as catch-per-unit effort; CPUE) and effective number of breeders (N_b) of Arctic grayling in the Big Hole River population").[4]

Rather than acknowledging that the Big Hole population remains small and volatile, the Service's challenged finding declared that the river's grayling had somehow achieved a "relative stability" that will be sufficient to ensure their viability in the face of escalating, climate-

[4] N_b refers to the number of effective breeders, or individuals with one or more offspring, as determined by genetic monitoring. AR:657.

driven threats. *Id.* at 59. Given that the available evidence didn't support this conclusion, the agency seemed to rely, instead, on incantation—an effort to will the fact into existence through repetition. In a single paragraph, for instance, the Service returned to its flawed characterization of the Big Hole population three times, repeatedly insisting that the fish had entered a short "period of relative stability" despite ongoing population fluctuations and recent declines. *Id.* at 59–60. In later sections of the finding, the Service repeated this narrative many times more—offering it up as proof, ultimately, that existing conservation efforts had eliminated any need to list the species. *See, e.g.*, *id.* at 63 (asserting that "[t]he most recent … data suggests … the [population] … has stabilized from the [previous] decline[,]" and, "[w]hatever the reason(s), it is clear that conservation measures are working"); *id.* at 65–66 (asserting population "is demographically … stable and appears to be responding favorably to conservation actions").

Because the Service's declarations of "relative stability" ran "'counter to the evidence before the agency[,]'" they failed to offer a reasonable basis for the challenged not-warranted finding. *See, e.g.*, *Ctr. for Biological Diversity v. Haaland*, 87 F.4th 980, 987 (9th Cir. 2023)

(quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)); *Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1163 (courts "need not defer … when the agency's decision is without substantial basis in fact").

B. The Service's attempt to rely on the viability of grayling within the Ruby River was also arbitrary.

The Service got no further in relying on the fluvial population in Montana's Ruby River, which was last estimated to have only seven effective breeders, AR:10272 (Gander (2019)); is known by the Service to be in further decline, 2020 Finding 69–73; and is accordingly threatened by "imminent" genetic losses, AR:110 (Kovach presentation).

The Service's first attempt to rely on the alleged viability of the Ruby River population—in 2014—was overturned by the Ninth Circuit. *CBD*, 900 F.3d at 1074. In the words of the Court, "[t]he 2014 Finding's reliance on the Ruby River's viability as a genetic reservoir contradict[ed] FWS's criteria for judging viability, which require[d] 'at least 10 years' of monitoring data" to confirm viability—more than the Service had at the time. *Id.* The Court accordingly concluded that the agency's "determination that the Ruby River population was viable and could provide redundancy was arbitrary and capricious[.]" *Id.*

With its latest finding, the Service has again declared a premature victory in the Ruby River, arguing that "[m]onitoring of the [river's] … grayling population … from 2009–2018 has indicated natural reproduction for 10 consecutive years[,]" and "thus the … population has met the criteria for a viable population outlined in the Montana Fluvial Arctic Grayling Restoration Plan." 2020 Finding 71. In making this assertion, however, the Service arbitrarily disregarded the actual language of the referenced restoration plan, under which a population can only "be considered stable and viable in a stream when monitoring confirms that, for at least 10 years, *successful stock recruitment exceeds mortality of reproductive adults* to successfully compensate for stochastic factors and perpetuate the species within suitable habitats." AR:10338 (emphasis added). The Service's limited data regarding "natural reproduction" within the Ruby River fell short of this standard in two respects.

First, while the Service's own scientists have elsewhere observed that grayling do not "recruit" until "age-3"—when they join the adult breeding population—the agency disregarded this fact in its assessment of the Ruby population, choosing to rely, instead, on surveys that found

small numbers of new, "age-0" fish. AR:48, 52 (Centennial management report) ("[g]rayling recruit at age-3"); AR:10839 (Centennial management plan) (grayling cannot be "reliably monitor[ed] … until they recruit to the spawning population at age 3"); AR:10271, 10273 (Ruby River Project Completion Report) (declaring the Ruby restoration "successful and complete" after finding as few as one "[n]aturally-produced young-of-year grayling … in all sampling events from 2009 to 2018"). In failing to consider whether evidence of natural reproduction was alone enough to demonstrate "successful stock recruitment," as the relevant plan required, the Service acted arbitrarily. *See, e.g.*, *All. for the Wild Rockies v. Petrick*, 68 F.4th 475, 494 (9th Cir. 2023) (faulting arbitrary reliance "on a plainly overinclusive" standard).

Second, even if "successful stock recruitment" could be reasonably understood to require nothing more than natural reproduction, this was only half of the question the Service had to answer. AR:10338 (plan). Under the restoration plan, again, the agency could only declare the Ruby population "stable and viable" after "confirm[ing] that, for at least 10 years, *successful stock recruitment [had] exceed[ed] mortality of reproductive adults*[.]" *Id.* (emphasis added). This required the Service

to do three things: (1) quantify the amount of "successful stock recruitment" that was occurring within the Ruby each year; (2) quantify the river's annual loss of "reproductive adults" to mortality; and (3) confirm that the amount of "successful stock recruitment" had "exceed[ed]" the amount of reproductive-adult mortality "for at least 10 years[.]" *Id.* Because the Service failed to undertake this analysis, it acted arbitrarily in declaring that the precariously small and declining Ruby population had achieved viability and could accordingly be relied upon to provide needed redundancy. *See, e.g.*, *Fox Television*, 556 U.S. at 515 ("[a]n agency may not … depart from a prior policy *sub silentio*"); *Petrick*, 68 F.4th at 494 ("'[a]gency action is lawful only if it rests on a consideration of the relevant factors'").

C. The Service could not reasonably rely on grayling in the Centennial Valley or Madison River drainage to provide needed redundancy.

In a final effort to find sufficient redundancy within the Upper Missouri population, the Service also pointed to two other places it characterized as having "primarily fluvial populations": the Centennial Valley and the Madison River drainage. 2020 Finding 12, 78, 181, 184–86. This was arbitrary.

Even if the Madison and Centennial populations could fairly be characterized as "primarily fluvial," their precarious demographics precluded the Service from relying on them as a source of redundancy. *See* 2020 Finding 66–69, 73–74; *but see, e.g.*, 2010 Finding, 75 Fed. Reg. at 54,724 (deeming Centennial grayling "adfluvial"). As the agency noted in its challenged finding, the Madison population is currently "declining" from "presumably low abundance[,]" and "may potentially be considered in danger of extinction or likely to become so in the foreseeable future." 2020 Finding 73–74, 186. And in the Centennial Valley, grayling numbers have "fluctuated through time[,]" with estimates of the number of effective breeders having decreased "from 207 to 406" in the early 2010s "to about 40 in 2015[.]" *Id.* at 66–68.[5] Given these troubling numbers and trends, the Service could not reasonably rely on the alleged viability of the populations in the Centennial Valley or the Madison River drainage.

[5] The Service acknowledged that "overwinter conditions" in Upper Red Rock Lake are likely responsible for this precipitous decline in the Centennial, yet it has failed to develop any solution for the problem. 2020 Finding 124–25; AR:1415 ("No management actions to improve winter habitat are presently identified or planned.").

D. The Service acted arbitrarily in dismissing the genetic threats posed by the grayling's small and isolated subpopulations within Montana.

In addition to raising a risk of extirpation from catastrophic events, the small size of the Upper Missouri's grayling populations has also created a genetic threat—one the Service acknowledged in 2010. *See* 2010 Finding, 75 Fed. Reg. at 54,741–42. As the agency noted in its challenged decision, "[t]he Upper Missouri River DPS … exists largely as a collection of isolated populations … , with little to no gene flow among populations." 2020 Finding 165. In light of this fact and the ESA's requirements, the Service was obligated to assess whether Montana's grayling are threatened by a potential loss of genetic diversity and the inbreeding effects that would follow—either now or "within the foreseeable future." 16 U.S.C. § 1532(20) ("any species … likely to become … endangered … within the foreseeable future" is "threatened"); *see also, e.g.*, AR:5550 (Jamieson (2012)) ("the need to maintain long-term genetic diversity for evolutionary potential is an important component of conservation programs"); AR:7927 (Palstra (2008)) ("genetic stochasticity should remain an important focus in the conservation of biodiversity").

Rather than undertaking a thorough evaluation of the grayling's long-term genetic health, the Service arbitrarily attempted to dismiss genetic threats altogether. According to the agency, while "[t]here has been considerable debate about what effective population size is adequate to conserve genetic diversity and long-term adaptive potential[,]" the "loss of genetic diversity is typically not an immediate threat even in isolated populations with an [effective population of less than one hundred], but rather is a symptom of deterministic processes acting on the population[.]" 2020 Finding 166. "In other words," the Service declared, "loss of genetic diversity due to small effective population size typically does not drive species to extinction … ; other processes, such as habitat degradation, have a more immediate and greater impact on species persistence[.]" *Id.*[6]

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[6] "Effective population size," or "N_e," "represents the size of an ideal population that would have the same rate of loss of genetic variation as the observed population[.]" AR:4221 (DeHaan (2014)). By calculating a population's "effective" size, biologists can determine "the rate at which genetic variation will be will lost from [the] population, and the likelihood that … [the] degree of inbreeding … will increase, making it a critical parameter for understanding conservation status[.]" AR:933 (Kovach (2019)).

The Service's dismissal of genetic threats as insufficiently "immediate" to warrant serious consideration was both arbitrary and unlawful. Under the ESA, again, the agency is charged with protecting—as "threatened"—"any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range[.]" 16 U.S.C. § 1532(20). In narrowly focusing its analysis on "immediate" threats, the Service failed to give reasonable consideration to the possibility that the Upper Missouri's grayling fall within this definition as a result of their isolation, limited genetic diversity, and already "imminent" prospects of further genetic losses. *See* 2020 Finding 166; AR:110 (Kovach presentation on Ruby); *Crow Indian Tribe v. United States*, 965 F.3d 662, 679 (9th Cir. 2020) (rejecting the Service's reliance on "studies conclud[ing] only that the Yellowstone grizzly's genetic health is likely not a threat *in the short term*[,]" when "both studies express[ed] concerns about … long-term genetic health") (emphasis in original); *Defenders of Wildlife v. Jewell*, 176 F. Supp. 3d 975, 1006 (D. Mont. 2016) (directing the Service to "consider the threats of demographic stochasticity and the loss of

genetic diversity due to [the wolverine's] small effective population size, as compounded by climate change").

As the Service has noted, the Ninth Circuit ultimately affirmed the agency's 2014 determination that the grayling's "small population size d[id] not pose a risk to genetic viability[,]" citing the fish's "increased population and '[u]pdated genetic information that was not available in 2010[.]'" *CBD*, 900 F.3d at 1073–74; 2020 Finding 7. Information that was not available in 2014, however, has now confirmed the threat posed to the Upper Missouri's river-dwelling populations by their small numbers and genetic isolation. The number of "effective" breeders in the Big Hole population has fallen repeatedly in recent years, resulting in an "effective population" size of only 306—well below the accepted target of 500 for maintaining long-term genetic diversity. 2020 Finding 61–64; *see also, e.g.*, AR:5545–50 (Jamieson and Allendorf (2012)) (reaffirming the "50/500 rule"). By the Service's own admission, the numbers are even more worrying in the region's other fluvial populations. 2020 Finding 66–74. In the Centennial Valley, researchers estimated an effective population size of only 166 to 291 fish *before* a 2015 "decline in the number of spawning adult Arctic

grayling in Red Rock Creek[.]" *Id.* at 67–68. As a result, "the population may lose genetic diversity in the long-term if … [the threats it faces] persist or are not mitigated[.]" *Id.* at 69. And in the Ruby River, a recent decline in the number of effective breeders—to only seven, AR:10272 (Gander (2019))—has created a situation in which "losses of genetic diversity may occur" and "[f]uture monitoring is warranted[.]" 2020 Finding 72–73; *see also* AR:110 (Kovach (2019)) (with <10 effective breeders, genetic-diversity "[d]eclines … are imminent"). With respect to the grayling in the Madison River drainage, finally, the Service has only been willing to say that they "continue[] to persist at presumably low abundance[,]" and that "[p]ast surveys … indicate a declining population[.]" *Id.* at 73–74.

In light of the recent studies confirming that the Upper Missouri's fluvial grayling populations are precariously small and declining, the Service was required to assess whether listing was warranted based on long-term genetic threats. *See, e.g.*, 16 U.S.C. § 1532(20); *Crow Indian Tribe*, 965 F.3d at 679. Its failure to do so was arbitrary and unlawful. *See id.*

III. The Service arbitrarily dismissed current and future habitat threats posed by high stream temperatures and low flows.

The Service also acted arbitrarily in dismissing both the "present" and "threatened" degradation of grayling habitat due to high stream temperatures and low flows. 16 U.S.C § 1533(a)(1)(A).

Grayling require connected, cold-water habitat to fulfill their life histories and maintain a healthy population. 2020 Finding 77, 91–92. The fish experience "physiological stress" at water temperatures of 70 degrees and above, *id.* at 91, while temperatures of 77 degrees can cause widespread fish kills, *id.* at 92.[7] Summer water temperatures, however, consistently exceed 70 degrees in the Big Hole's mainstem and tributaries. *Id.* at 96–97.

The Service's challenged finding acknowledged the threats posed by high temperatures and low flows, but ultimately dismissed them in the Big Hole by relying on an arbitrary assessment of tributary temperatures, unsupported anecdotes about the grayling's use of thermal "refugia," and a flawed analysis of potential flow-rate

[7] All referenced temperatures are in Fahrenheit.

improvements. The agency also arbitrarily ignored thermal threats in the Ruby River altogether, despite documented high temperatures there.

A. The Service arbitrarily dismissed the threat of higher temperatures in the Big Hole.

In its challenged finding, the Service attempted to minimize the threat posed by temperatures over 70 degrees in the Big Hole by citing limited monitoring data indicating that the duration of such exceedances appears to be decreasing, which ensures fish have access to cold water. *Id.* at 96–97. This was arbitrary. The agency's data—the only monitoring data in the record—demonstrates that the Big Hole's tributaries are not reliably cool. *See* AR:10325–27. The most recent numbers, from 2017 and 2018, show that nearly all monitored tributaries exceeded 70 degrees, and the average duration of each exceedance ranged from 1.33 to 7.31 days. AR:10326–27 (exceedances of 32–175 hours). Thus, as with the Service's arbitrary 2014 finding, "[e]ven the tributaries of the Big Hole River that supposedly serve as cold water refugia are above the desired temperature according to the scientific studies on which FWS relies." *CBD*, 900 F.3d at 1071. "Having determined what is necessary"—the presence of adequate cold-water

habitat—"the [Service] cannot reasonably rely on something less to be enough." *Id.* (quotations omitted).

The Service attempted to sidestep these documented exceedances by casting doubt on the monitoring data's implications. The agency's arguments cannot be sustained.

First, the challenged finding dismissed evidence of excessive temperatures at the Service's four tributary-monitoring sites by asserting that temperature fluctuation throughout the system—or "heterogeneity"—"provides thermal refugia for … grayling … when water temperatures elsewhere in the system become stressful." 2020 Finding 97–98. But this conclusion was unsupported. As the Service admitted, "[t]he extent of water temperature heterogeneity in the Big Hole River and its tributaries is typically not captured by using fixed site … monitoring stations[,]" which are instead "intended to capture broad trends … across a large landscape, not characterize fine scale water temperatures within each tributary or section of mainstem river." *Id.* at 98. The Service cannot reasonably point to the *absence* of monitoring data resulting from the "limitations" of its sampling, *id.* at

101, to dismiss the actual evidence of stressful temperatures. *See Servheen*, 665 F.3d at 1030.

Second, the Service further attempted to dismiss the high temperatures recorded at several downstream sites by asserting that temperatures would be expected to cool upstream. 2020 Finding 99. This approach, however, disregarded the science demonstrating that grayling require both upstream and downstream habitats. AR:6265 (Lamothe (2003)) (downstream habitat may provide "access [to] more productive feeding areas … [and] the deep pools that grayling showed a preference for"); *see also* AR:911 (Olsen) ("habitat quality for adult fish" is "of higher quality" downstream). Given the grayling's need to access both upstream and downstream habitats, the Service arbitrarily overlooked "important aspect[s]" of the problem by assuming, contrary to the evidence before it, that high downstream temperatures will not harm grayling. 2020 Finding 99; *Or. Nat. Res. Council v. Allen ("ORNC")*, 476 F.3d 1031, 1036 (9th Cir. 2007) (agencies must draw "a rational connection between the facts found and the choices made").

Third, the Service attempted to further downplay its high-temperature data by emphasizing that such temperatures do not persist

"constantly for consecutive days." 2020 Finding 93, 100. But this, again, ignored monitoring data demonstrating that stressful temperatures persist, on average, from 32 to 175 hours *each time they occur*. AR:10326–27. And research has also demonstrated that high temperatures, even if experienced for part of the day, harm grayling. One study documented "declines in feeding and activity" in response to brief hot stretches, "indicating that long-term exposure to such a thermal regime would be detrimental." AR:5626 (Johnstone (2003)). Another observed that "at temperatures elevated beyond the optimum for growth, daily temperature *oscillations* result in reduced growth in salmonids[,]" which "may lead … to population level effects of elevated temperature." AR:2786, 2789 (Chadwick (2012)) (emphasis added). The Service's disregard of the science contradicting its conclusion was arbitrary and contrary to the ESA. *See Kern Cnty. Farm Bureau v. Allen*, 450 F.3d 1072, 1080 (9th Cir. 2006) (ESA prohibits Service "from disregarding available scientific evidence that is in some way better than the evidence it relies on") (cleaned up).

B. The Service arbitrarily analyzed the grayling's ability to access thermal refugia.

The Service also failed to address whether sufficient numbers of Big Hole grayling are finding and using thermal refugia to offset population-level threats from high temperatures.

First, the Service arbitrarily concluded that grayling currently utilize refugia in the Big Hole by relying on speculative evidence without acknowledging its limitations. 2020 Finding 100. For example, the Service referenced an email from a state fisheries biologist regarding the presence of grayling in a potential refuge, but the email noted the biologist was "not sure" whether grayling had migrated there for cool water. AR:911 (Olsen). Similarly, the Service referenced a monitoring report documenting grayling movement in Big Hole tributaries, but given the movement's May-to-June timing, the report suggested it may have related to high flows and feeding, not heat. AR:6255, AR:6265 (Lamothe (2003)) (temperature only a "possible explanation" for movement).

All told, the Service's reliance on such sparse and inconclusive data to conclude that grayling are using refugia—and its failure to assess whether such use would even be sufficient to address the threat

of high temperatures—was arbitrary. *See Tucson Herpetological Soc'y v. Salazar*, 566 F.3d 870, 879 (9th Cir. 2009) (arbitrary to rely on study whose author warned it was "based on sparse data" and "should be viewed with caution").

Second, the Service arbitrarily concluded, based largely on the CCAA, that sufficient refugia remain to offset the negative effects of heat-caused degradation—within the Big Hole, at least. 2020 Finding 88–89, 101. But the Service's conclusions ignored the fact that riparian-restoration efforts in the Big Hole, while critical, have not succeeded in eliminating excessive heat, and the future persistence and success of such efforts are uncertain at best. *See* Section V, *infra.*

Notably, only 61 percent of the stream miles in the CCAA's management area—207 of 340—are enrolled. 2020 Finding 88. Of these, the riparian areas along only 110 miles—less than one-third—are currently "sustainable." *Id.* The Service did not analyze whether this amount of habitat is sufficient to support the Big Hole's grayling. Instead, the Service asserted, without support, that riparian habitat will "continue improving." *Id.* at 91. But the agency's conclusion failed to account for largely static enrollment in the CCAA, and points to no

anticipated increase in enrollment. *Compare* AR:10603 (2011 numbers) *with* AR:10634 (similar 2014 numbers). Given that the Service could have concluded, based on the same evidence, that habitat improvement will plateau or even decline, its conclusion was arbitrary. *Servheen*, 665 F.3d at 1028 (rational explanation for why data "counsels in favor" of one conclusion required); Section V, *infra*.

Third, even assuming sufficient cold-water habitat exists, the Service disregarded science demonstrating that high temperatures and low flows could block grayling movement, potentially rendering refugia inaccessible when they are needed most. The Service acknowledged that interference with grayling migration throughout their life cycle can reduce reproduction, hinder growth, and cause mortality. 2020 Finding 31–32, 85. Indeed, the agency's finding noted that irrigation diversions had previously prevented grayling migration and curtailed their range, but it ultimately assumed, arbitrarily, that removal of these barriers was enough to create connected habitats. *Id.* at 85–86.

Had the Service examined the available science, it would have found that high temperatures and low flows also impede migration. Research demonstrates that "drying streams … may act as barriers to

fish movement even before habitats dry completely," AR:6512 (Magoulick (2003)), and "[c]ontiguous sections of the [Big Hole] … exceed[ing] chronic and acute thresholds could act as thermal barriers to fish migration, especially in the main stem[,]" which could "negatively affect … fluvial Arctic grayling," AR:9379 (Vatland (2015)). Indeed, the conditions for such barriers currently exist on the Big Hole, with chronically high temperatures in the mainstem, AR:10326–27, and "similar" stream temperatures in the river's middle and upper tributaries. AR:9308 (Vatland (2015)).

All told, the Service acted arbitrarily in concluding that the Big Hole's grayling can and do access thermal refugia. *See ONRC*, 476 F.3d at 1036.

C. The Service's analysis of low stream flows in the Big Hole was arbitrary.

The Service's efforts to dismiss the threats posed by low stream flows were similarly flawed. "Low flows, which contribute to high water temperatures, are also tied to the decline of … grayling in the Big Hole[.]" AR:8743 (Sladek (2013)) (citing Lamothe (2004)). But the Service dismissed these threats, relying largely on the Big Hole's CCAA. The CCAA, again, relies on landowners voluntarily limiting irrigation

withdrawals under certain low-flow conditions—but only during average and above-average snowpack years. AR:1189–90 (CCAA); 2020 Finding 102.

The CCAA's flow targets, even when consistently met, are inadequate under the Service's own standards. The agreement sets "minimum flow targets" for the Big Hole—the "baseline or minimum values to ensure instream flow resources sufficient to promote recovery of grayling[.]" AR:1199 (CCAA). But the CCAA sets a goal of achieving these minimum instream-flow targets just 75 percent of the time, and the targets are operative, again, only in years of average or greater snowpack. 2020 Finding 102. The agreement identifies no targets in below-average years, when dewatering and high water temperatures are most likely to harm grayling. *Id.* at 162–63. In short, even when the CCAA's goals are fully met, there can be insufficient water in the Big Hole a quarter of the time—and even greater shortages during years with less-than-average snowpack. The Service's failure to analyze whether such standards are sufficient to alleviate the threat posed by low flows was arbitrary.

D. The Service arbitrarily ignored the temperature and flow threats to the Ruby River's grayling.

Finally, in its discussions of high stream temperatures and low flows, the Service ignored the Ruby River, which is outside the Big Hole CCAA. 2020 Finding 91–106, 122–23. The agency recognized that the Ruby population is important for "redundancy and representation" of the fluvial form. *Id.* at 73. Yet the Service effectively disregarded potential thermal threats to this population. *Id.* at 108–09.

The only temperature data in the record for the Ruby River, from 2014 and 2015, show frequent exceedances of the chronic threshold. *Id.* at 108. While acknowledging that the Ruby's grayling "may have been subjected" to harmful temperatures, the Service dismissed the threat by speculating that they may have "move[d] out of the area and [sought] thermal refugia when water temperatures became stressful, which [wa]s unknown in this case, but certainly within the capability of Arctic grayling[.]" *Id.* The Service also argued that the limited data suggested temperatures only exceeded chronic thresholds for "relatively short" periods—up to 104 hours. *Id.* at 108–09. But the agency did not address evidence that such temperatures may have sublethal impacts that

constrain grayling abundance—an "important aspect of the problem." *See* Section III.A, *supra*; *ONRC*, 476 F.3d at 1036 (quotation omitted).

IV. The Service irrationally and unlawfully dismissed climate-change threats.

The viability of fluvial grayling—already threatened by high water temperatures and low flows—is further jeopardized by the "projected shift to warmer water temperatures" as climate change advances. AR:9357 (Vatland (2015)); *see* 2020 Finding 118, 164, 168–69. Yet the Service arbitrarily dismissed these compounded threats based on its conclusions that warming might be slower than predicted and some thermal refugia will remain. Even if the agency had rationally concluded that refugia sufficiently mitigate the *current* high water temperatures experienced by fluvial populations—and it did not—the agency overlooked evidence that climate change will significantly constrict suitable habitat; ignored the Ruby River; and disregarded significant impediments (thermal barriers, predation, and competition) that will limit the future effectiveness of isolated refugia as climate change's effects are increasingly felt. This was arbitrary.

The record evidence universally supported a finding that climate change will harm grayling in the foreseeable future. The three studies

the Service cited as the best-available science on this subject all predict increasing stream temperatures, including more frequent and widespread exceedances of the species' 70-degree chronic and 77-degree acute thresholds. 2020 Finding 169–171 (discussing Isaak (2015); Vatland (2015); Isaak (2016)). Based on this evidence, the Service acknowledged:

- "[T]here has been an increased frequency of high water temperatures that have the potential to affect survival or optimal growth for Arctic grayling[.]" *Id.* at 118.
- Drought "leads to dewatering and high temperatures that can limit connectivity among spawning, rearing, and sheltering habitats[,]" *id.* at 162, and "is expected to increase in both duration and severity in the future due to climate change[,]" *id.* at 164.
- Stream warming appears to be facilitating encroachment of nonnative brown trout, which reduce grayling recruitment through competition and predation. *Id.* at 168.
- With expected air-temperature increases, "regional water temperatures in some streams or portions of streams are also expected to increase[.]" *Id.* at 169

While these acknowledged future conditions are concerning enough, the cited studies present even more dire predictions. Isaak (2015) predicted that in the northwestern United States, including Montana, more than 80 percent of the climate refugia present in the

1980s will disappear by the 2040s. AR:5437. And on private lands, more than 87 percent of climate refugia are expected to be lost. *Id.* These projections "mean that extirpations of some populations are inevitable." AR:5443. Research specific to the Big Hole watershed emphasizes this risk. Vatland (2015) projected that, by the 2060s, 35 percent of the Big Hole and its tributaries will exceed 77 degrees at some point in the summer, and half will exceed 70 degrees for 50 percent or more of summer hours. AR:9355 (Vatland (2015)).

The Service's attempt to discount such dire predictions by pointing to slower-than-projected past warming amounts to arbitrary speculation. 2020 Finding 169, 174 (citing Isaak (2016)). While Isaak (2016)—which looked at warming trends throughout the Northwest—postulates that declines in cold-water fish species "may proceed more slowly than previously thought[,]" AR:5463, the study cautions that the persistence of such populations depends on the amount, type, and health of existing habitat; the presence of nonnative species; and conditions where "barriers are not an impediment" to accessing thermally suitable water. *Id.* The study further observed that more extreme weather and channel disturbances due to climate-driven floods

and wildfires mean that cold-water fish populations "are likely to require larger habitats to persist than has historically been the case[.]" AR:5464. Thus, while the Service cited Isaak (2016) only for its optimistic projection of slower stream warming across the region, it overlooked the study's important caveats requiring population-specific consideration. *Id.* And it also disregarded research specific to Upper Missouri grayling, which consistently points to significantly diminished habitat conditions for fluvial populations as climate change advances. *See, e.g.*, AR:9355–56 (Vatland (2015), citing additional studies); AR:8774 (Sladek (2013)).

To mitigate climate impacts, the Service relied on the effectiveness of riparian-restoration efforts to maintain thermal refugia in Big Hole tributaries and measures to boost streamflows in the river's mainstem under the CCAA. 2020 Finding 174. But as explained above, the Service did not justify its reliance on these efforts that, while critically necessary even to short-term conservation, may not be adequate long-term absent the ESA's additional protections. Section III.D, *supra*. Notably, while the agency's analysis focused on the Big Hole, persistence of the Ruby population is also important to fluvial

redundancy and representation. 2020 Finding 73. Yet the Service could not point to any current or planned riparian or flow-restoration efforts on the Ruby River to mitigate future warming. *See* 2020 Finding 120 (discussing Ruby); AR:1043 (Ruby tributary-habitat surveys). And with respect to the Big Hole, the Service did not explain its finding that such efforts are *currently* sufficient, let alone that the efforts will continue and create sufficient refuge habitat as temperatures warm and grayling "require *larger* habitats to persist than has historically been the case[.]" AR:5464 (Isaak (2016)) (emphasis added). Finally, the Service failed to evaluate evidence that, even if daytime water-temperature increases can be mitigated by riparian shading, "global warming is predicted to cause higher nighttime stream temperatures[.]" AR:5632 (Johnstone (2003)). "This would reduce the cool phase of the … temperature cycles when fish could recover from physiological damage accumulated during the warm phase." *Id.*

While the Service counted on thermal refugia in Big Hole tributaries to counteract continued warming, "prolonged periods of climatic extremes" may also increase the impacts of barriers to access. AR:6265–66 (Lamothe (2003)). And "thermal barriers" in the Big Hole's

mainstem are not reduced by riparian restoration and may increasingly impede grayling migration. AR:9379 (Vatland (2015)); *see* 2020 Finding 120, 173. Even increasing flows in the mainstem, *id.* at 173–74, may be insufficient "under extreme climate conditions" because "streamflow has a limited capacity to buffer against high stream temperatures" in the Big Hole, AR:8764 (Sladek (2013)). While the Service relied on these studies as the best-available science, it arbitrarily failed to acknowledge these important caveats about the effectiveness of such habitat in a warming climate. *WildEarth Guardians v. Haaland*, 561 F. Supp. 3d 890, 901 (C.D. Cal. 2021) (holding "[s]elective reliance" on studies arbitrary).

Additionally, competition and predation from nonnative brown trout, which increases as temperatures warm, will further limit the mitigation potential of small and isolated refugia. *See* AR:9294 (Vatland (2009)) ("harsh summer stream conditions may exacerbate … competition and predation … between grayling and non-native species"); AR:2735 (Chadwick (2015)) ("[a]ggregating at cool water sites led to increased vulnerability to predators … in brook trout"); AR:6509–10, 6513 (Magoulick (2003)) (increased competition and predation may

limit refugia use); AR:1912–13 (Baird (2003)) ("[f]eeding opportunities were likely limited in most cool water areas as many fish were confined to a small refuge habitat" and "[c]ompetition between species should intensify as the size of a coolwater refuge declines"). While the Service acknowledged that "higher water temperatures may favor brown trout where they compete against salmonids[,]" such as grayling, "with lower thermal tolerances[,]" 2020 Finding 168, it did not grapple with the potentially lethal implications of such interactions as they exclude grayling from essential cool-water habitat in the future. *See id*. at 174 (summarizing cumulative climate impacts but omitting evidence of competition and predation).

In overlooking significant evidence that undermines its conclusion that climate change will not threaten grayling in the foreseeable future, the Service acted arbitrarily. *CBD*, 900 F.3d at 1060.

V. The Service arbitrarily failed to evaluate the durability of the Big Hole CCAA.

The Service also acted arbitrarily, finally, by relying heavily on continued implementation of the Big Hole CCAA while failing to grapple with its durability.

As noted above, the CCAA was critical to the Service's not-warranted finding. The agency found that threats to the grayling "are being effectively mitigated on private land … by conservation actions under the Big Hole CCAA[.]" 2020 Finding 177. The CCAA was also central to the Service's conclusion that the Big Hole population will not be threatened in the foreseeable future: the agency reasoned that it does "not expect habitat to decline in the Big Hole … because of the proven track record of CCAA projects." 85 Fed. Reg. at 44,481. In particular, the agency found that, to mitigate future effects of drought and climate change, riparian restoration and efforts to increase flow under the CCAA "will continue to be key[.]" 2020 Finding 176. To combat these future effects, the Service counted on Big Hole habitat and riparian areas continuing to improve under the CCAA, finding that "[h]igh-quality habitat … is improving where it is not optimal" and that the "[h]ealth of riparian areas is trending upward." *Id.*

Despite relying so heavily on the CCAA to conclude that listing is not warranted, the Service arbitrarily failed to assess the CCAA's adequacy in three key ways:

First, the Service failed to consider whether the CCAA will persist past July 2026, its expiration date. The agreement was adopted in 2006 for 20 years. AR:1239 (CCAA). And the CCAA only says that the State of Montana "will notify the [Service] prior to expiration of the Agreement to allow sufficient time to extend the Agreement, *if desired*." *Id.* (emphasis added). The record contains neither evidence that the parties intend to extend the CCAA nor any consideration by the Service of whether the CCAA will be extended.

Although the CCAA's conservation measures could disappear in 2026, the Service arbitrarily counted on them continuing for much longer. For example, the agency relied on CCAA actions to discount modeling showing that the grayling's temperature tolerances will be exceeded in the Big Hole and its tributaries more often in the 2040s and 2060s. 2020 Finding 170–74. The Service reasoned that "warming water temperatures … [will be] mitigated in large part by restoring riparian areas and restoring more flow to the mainstem Big Hole River, both of which are central tenets of the Big Hole CCAA." *Id.* at 174.

In failing to consider the CCAA's potential expiration, the Service acted arbitrarily. *See Rocky Mountain Wild v. Walsh*, 216 F. Supp. 3d

1234, 1254 (D. Colo. 2016) (Service arbitrarily failed to explain why species would not be threatened when conservation agreement expired in 15 years).

Second, in the CCAA, the Service acknowledged that "active involvement" of private landowners is "critical" to the conservation of Big Hole grayling because the grayling's decline there was "primarily linked" to agricultural activities.[8] AR:1168 (CCAA). Yet the agency arbitrarily failed to consider whether its not-warranted finding would eliminate landowners' main incentive to participate in the CCAA. The agreement was designed to encourage "landowners to voluntarily implement … conservation measures … by providing them with assurances that their … activities will not be required to change beyond … their site-specific plan[s] should grayling become listed[.]" *Id.* By lifting the prospect of listing, the Service removed the primary incentive

[8] The Service explained, for example, that the "complexity of water use, water rights and water conveyance for agricultural purposes in the upper Big Hole drainage requires an approach where the majority of water users and landowners are engaged in basin-wide solutions to land and water uses that affect grayling." AR:1169 (CCAA).

for landowners to implement the CCAA's conservation measures: not being subject to further requirements upon listing.

The CCAA includes no penalties for landowners who abandon their conservation plans; such landowners only lose the regulatory assurances that would apply if grayling were listed. *See* AR:1306–08 (Example Site-Specific Plan, CCAA App. G) ("no party shall be liable in damages for any breach … or failure to perform an obligation under this site-specific plan"). Landowners may be particularly disinclined to implement their site-specific plans during drought, which "is expected to increase in both duration and severity in the future due to climate change[.]" *See* 2020 Finding 164.

Finally, the Service failed to consider whether private landowners might opt to not renew their site-specific conservation plans for other reasons. Each plan is a 10-year agreement. AR:10225 (CCAA annual report). Under the CCAA, plan extensions can require revised measures from landowners to reflect updated conditions. *See* AR:1239 (CCAA). Thus, landowners may choose not to extend if doing so would entail additional requirements beyond their current plans—or if they no longer want to perform existing obligations.

As of the 2017–19 CCAA report (the latest in the record), 24 of 31 site-specific plans were due for "10-year updates" between 2020 and 2025. AR:10226. If significant numbers of landowners chose not to renew their plans, the Service could not reasonably count on enough additional landowners joining the agreement to take their place: landowner enrollment has remained basically flat since 2006. *See* AR:10034 (2007 CCAA report) (listing 32 participating landowners); AR:10225 (2017–19 CCAA report) (noting no new landowner enrollment).

All told, the Service's insistence that the CCAA's protections for the Big Hole's grayling "are expected to persist into the future" was unsupported and arbitrary. 2020 Finding at 182.

CONCLUSION

For the foregoing reasons, this Court should vacate the Service's arbitrary and unlawful 2020 finding. The plaintiffs further request a remand order directing the Service to make a new finding within twelve months to address ongoing, dire conditions for the imperiled Upper Missouri River grayling. *See, e.g.*, 16 U.S.C. § 1533(b)(3)(B) (governing 12-month findings); Kelly Decl. ¶ 9.

Respectfully submitted this 23rd day of January, 2024.

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CERTIFICATE OF COMPLIANCE

I hereby certify that this brief contains 9,462 words, as counted by Microsoft Word, consistent with the 9,500-word limit established by the Court's January 11, 2024 Order.

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